

CLAIMS

1. A device comprising a tactile interface formed by a plate (10) having a surface (10a) capable of being modified in a controlled manner, the plate comprising an array of elements (25) for modification of the surface (10a), the device also comprising control means of the modification elements of the surface (10a), characterised in that the plate (10) is made of a shape memory material A or comprises at least one sub-plate made of shape memory material A, and in that the array of modification elements (25) of the surface (10a) of the plate (10) is constituted by an array of one or more blades (23) solid monolithically with the plate (10) by one or more arms (13) solid monolithically with the plate (10), one or more recesses (14) for releasing blades being present on a part of a perimeter of the blade (23), the blade (23) having a first position at a first temperature and a second position at a second temperature.

20       2. The device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in Claim 1, characterised in that the shape memory material making up the plate (10) is a two-way material having a first hot form and a second cold form.

25       3. A device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in claim 1, characterised in that modification elements (25) of the surface (10a) of the plate (10) incorporate elastic elements (15, 13b) mechanically connected on the one hand to the plate (10) and on the other hand to the modification element (25) of

the surface of the plate to which these elastic elements (15, 13b) belong, exerting a return force on the modification element (25) of the surface of the plate (10) to bring it back from the second to the first form.

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4. A device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in claim 2, characterised in that modification elements (25) of the surface (10a) of the plate (10) incorporate elastic elements (15, 13b) mechanically connected on the one hand to the plate (10) and on the other hand to the modification element (25) of the surface of the plate to which these elastic elements (15, 13b) belong, exerting a return force on the modification element (25) of the surface of the plate (10) to bring it back from the second to the first form.

5. The device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in Claim 1, characterised in that it is formed from two sub-plates (15, 17; 16, 19) solid with one another by a main common surface.

6. The device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in Claim 5, characterised in that one of the sub-plates (16) is made of a shape memory material.

7. The device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in Claim 5, characterised in that the two sub-plates (16, 19) are made of a shape memory material.

8. The device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in Claim 7, characterised in that a sub-part (25a) of a modification element (25) of the surface (10a) of the plate (10) formed in one of the sub-plates (16) has a recessed part (14a) present above a part (13c) of a full sub-part (25c) of the other sub-plate (19).

10 9. The device comprising a tactile interface formed by a plate (10) made of a shape memory material as claimed in claim 6, characterised in that a layer (18) made of thermally insulating material is interposed between the two sub-plates (16, 39) made of shape memory material.

15 10. The device (1) comprising a tactile interface as claimed in claim 1, characterised in that the control means (40) of the transformation of the modification elements (25) of the tactile sensation comprise one or more laser emitters (42) whereof the radiation from each is utilised to create the transformation of one or more modification elements (25) of the tactile sensation, the radiation emitted by a laser emitter (42) acting by heating arms (13), the deformation of arms (13) causing a blade to pass from the first to the second position.

20 25 11. The device (1) comprising a tactile interface as claimed in Claim 10, characterised in that the control means (40) of the modification elements (25) of the tactile sensation comprise as many laser emitters (42) as modification elements (25) of the tactile sensation, with the radiation

from a laser (42) being put in bijective correspondence with a modification element (25) of the tactile sensation.

12. The device (1) comprising a tactile interface as  
5 claimed in Claim 10, characterised in that the control means  
(40) of the modification elements of the tactile sensation  
comprise a laser emitter (42) controlling a plurality of  
modification elements (25) of the tactile sensation and means  
(43, 44, 47) for mobilising the radiation with one or two  
10 degrees of freedom.

13. The device (1) comprising a tactile interface as  
claimed in claim 10, characterised in that it comprises a  
fibre optic (44) having an inlet end (46) receiving the  
15 radiation output by the laser emitter (42) and an outlet end  
(45) for the laser radiation, with the radiation used to  
produce transformation of one or more modification elements  
(25) of the tactile sensation originating from said outlet of  
the fibre optic.

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14. The device (1) comprising a tactile interface as  
claimed in Claim 12, characterised in that it comprises a  
translation plate (43), the laser emitter being shifted by  
this plate (43).

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15. The device (1) comprising a tactile interface as  
claimed in Claim 12, characterised in that it comprises a  
translation plate (43), the outlet end (45) of the fibre optic  
(44) being shifted by this plate (43).

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16. The device (1) comprising a tactile interface as claimed in Claim 12, characterised in that it comprises a reflector (47) controlled in rotation, this reflector receiving the radiation originating from a laser emitter (42).

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17. The device (1) comprising a tactile interface as claimed in Claim 13, characterised in that it comprises a reflector (47) controlled in rotation, this reflector receiving the radiation originating from a laser emitter  
10 (42) via the fibre optic (44).